assembly drives an impeller that creates a low pressure area inside the receptacle. The pressure difference between the inside and the outside of the receptacle creates a suction effect at the hose inlet, which causes dust, debris, and liquids to enter the receptacle through the hose.

Referring to FIG. 1 and FIG. 2, a vacuum cleaner tank or receptacle 10 (FIG. 1) is used to house a filter bag 12 (FIG. 2). The filter bag 12 includes an aperture 14 surrounded by a gasket 15 through which air containing particulate matter may pass for filtering. The tank 10 includes an inlet 16 through which the air may pass to the filter bag aperture 14. The filter bag 12 may be made of a variety of materials including, but not limited to, paper, foam, cloth or other woven materials. The filter bag 12 is securely held in place inside the filter tank 10, in part, by a filter bag retainer 18. The filter bag retainer 18 may be formed from plastic materials, such as polypropylene, polyethylene, ABS, and/or similar materials. Preferably, the filter bag retainer 18 includes two slots 20. The slots 20 are used to receive a plate 22 on the filter bag 12. Preferably, the plate 22 is made of cardboard and contains an aperture 24 substantially the same size as the inlet 16. The plate 22 is permanently attached to the filter bag 12 in a known manner such that the plate aperture 24 substantially aligns with the filter bag aperture 14, thereby creating a filter bag assembly 26.

The filter bag retainer 18 includes a threaded cylinder 28 forming a retainer aperture 30. Further, the threaded cylinder 28 includes a cylinder abutment 31. Preferably, the retainer aperture 30 is substantially the same size as the filter bag aperture 14, the plate aperture 24, and the inlet 16. In the preferred embodiment, the filter bag assembly 26 is attached to the filter bag retainer 18 by sliding the plate 22 into the retainer slots 20. The filter bag assembly 26 is then held in position inside the tank 10 by inserting the threaded cylinder 28 through the inlet 16 from the inside of the tank 10 to the outside of the tank 10. As a result, the inlet 16, the retainer aperture 30, the plate aperture 24, and the filter bag aperture 14 are coaxially aligned.

For the purpose of restricting both horizontal and vertical movement of the aligned apertures (14, 16, 24, 30), an inlet fitting 32 is provided. The inlet fitting 32 is cylindrical in shape with a ridged end 34 and a non-ridged end 36. By inserting the non-ridged end 36 of the inlet fitting 32 through the aligned apertures (14, 16, 24, 30) in a direction from outside the tank 10 to inside the tank 10, the filter bag assembly 26 is prevented from sliding out of the retainer slots 20. Accordingly, the filter bag 12 is secured to the retainer 18 by the inlet fitting 32 inside the tank 10, and the particulated air may pass easily through all of the apertures (14, 16, 24, 30).

For the purpose of loosely trapping the inlet fitting 32 adjacent the filter bag retainer 18, a swivel fitting 38 is provided. The swivel fitting 38 is cylindrical in shape and includes a threaded inner surface 40 and a swivel fitting abutment 42. The threaded inner surface 40 of the swivel fitting 38 engages and joins the threaded cylinder 28 of the filter bag retainer 18 by rotation of the swivel fitting 38. As the swivel fitting 38 is tightened down on the filter bag retainer 18, a first ridged member 44 of the inlet fitting 32 is loosely trapped adjacent the cylinder abutment 31, and a second ridged member 46 of the inlet fitting 32 is loosely trapped adjacent the swivel fitting abutment 42 (see FIGS. 3–5).

In addition, a hose 48 is provided. The hose 48 includes a series of outer ribs 52 and a series of inner ribs 54 forming a grooved aperture. The inner ribs 54 engage and couple to the second ridged member 46 of the inlet fitting 32 preferably using a force fit in a known manner. In this configuration, the end of the hose 48 may travel with the rotating swivel fitting 38 (see FIGS. 3–5).

In summary, persons of ordinary skill in the art will readily appreciate that a vacuum cleaner tank assembly for securely housing a filter bag inside a vacuum cleaner tank has been provided. Systems implementing the teachings of the invention do not require the user to force and/or bend the cardboard plate into position. As a result, user's will find it easier to install a new filter bag. Further, less damage will occur to the cardboard plate, thereby decreasing the amount of dirty air that escapes.

The foregoing description has been presented for the purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed. Many modifications and variations are possible in light of the above teachings. It is intended that the scope of the invention be limited not by this detailed description, but rather by the claims appended hereto.

What is claimed is:

1. A vacuum cleaner assembly for attaching a filter bag to a receptacle, the receptacle including an inlet, the assembly comprising:

a filter bag retainer;

a first fitting extending from outside the receptacle through the inlet, through the filter bag retainer, and into the filter bag; and,

a second fitting engaging the filter bag retainer to trap the first fitting adjacent to the filter bag retainer.

2. The vacuum cleaner assembly defined in claim 1, wherein the filter bag retainer comprises first and second slots for receiving a plate on the filter bag.

3. The vacuum cleaner assembly defined in claim 1, wherein the filter bag retainer further comprises a threaded cylinder forming a retainer aperture, wherein the threaded cylinder is inserted through the inlet.

4. The vacuum cleaner assembly defined in claim 1, wherein the filter bag retainer comprises a first threaded aperture, and the second fitting comprises a second threaded aperture, the first threaded aperture is adapted to pass through the inlet and couple to the second threaded aperture.

5. The vacuum cleaner assembly defined in claim 1, wherein the second fitting is further adapted to hold a hose adjacent to the inlet fitting.

6. The vacuum cleaner assembly defined in claim 1, wherein

the first fitting comprises a first ridged member and a second ridged member;

the filter bag retainer comprises a threaded cylinder and a first abutment;

the second fitting comprises a threaded inner surface and a second abutment; and

the assembly is adapted to loosely trap the first ridged member against the first abutment and to loosely trap the second ridged member against the second abutment as the threaded inner surface is tightened on to the threaded cylinder.

7. The vacuum cleaner assembly defined in claim 1, further comprising a hose, wherein the hose comprises a grooved aperture, the first fitting comprises a ridged member, and the grooved aperture couples to the ridged member.

8. The vacuum cleaner assembly defined in claim 1, wherein the receptacle comprises a tank.

9. A vacuum cleaner assembly comprising:

a receptacle including an inlet;

a filter bag including a filter bag aperture;

a plate connected to the filter bag, wherein the plate includes a plate aperture;

a filter bag retainer including first and second retainer slots, a threaded cylinder, and a cylinder abutment, wherein the plate slides into the retainer slots and the threaded cylinder is inserted into the tank aperture;

a first fitting including a ridged end, a non-ridged end, a first ridged member, and a second ridged member, wherein the non-ridged end is inserted through the inlet, the filter bag aperture, and the plate aperture; and

a second fitting including a threaded inner surface and a fitting abutment, wherein the threaded inner surface engages the threaded cylinder thereby trapping the first ridged member adjacent the cylinder abutment and trapping the second ridged member adjacent the fitting abutment.

10. The vacuum cleaner defined in claim 9, further comprising a hose including outer ribs and inner ribs, wherein the inner ribs engage the ridged end of the first fitting.

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